

SNAKE CREEK

NARRATIVE REPORT

JANUARY - DECEMBER 1965

SNAKE CREEK NATIONAL WILDLIFE REFUGE
COLEHARBOR, NORTH DAKOTA

NARRATIVE REPORT

JANUARY THROUGH DECEMBER, 1965

PERSONNEL

Refuge Manager	David C. McGlauchlin
Wetlands Manager	Ralph F. Fries
Refuge Clerk	Alton A. Burgeson (resigned 10/13/65)
Maintenanceman	Marvin H. Boots

WAE EMPLOYEES

Laborer . . .	Jeff Stockdill . . .	June 3 - Sept. 11
Laborer . . .	Dave Krumwiede . . .	July 6 - Nov. 26
Laborer . . .	Howard Anderson . . .	Aug. 2 - Sept. 4
Laborer . . .	Gary Eslinger	Nov. 2 - Dec. 31

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I. GENERAL

A. Weather Conditions

	Month	<u>Precipitation</u>		Max. Temp.	Min. Temp.	
		<u>Normal</u>	<u>Snowfall</u>			
January	<u>0.20</u>	<u>0.60</u>	<u>1.0"</u>	<u>36</u>	<u>-31</u>	
February	<u>Tr.</u>	<u>0.59</u>	<u>0.5"</u>	<u>45</u>	<u>-23</u>	
March	<u>0.24</u>	<u>0.76</u>	<u> </u>	<u>38</u>	<u>-16</u>	
April	<u>0.89</u>	<u>1.24</u>	<u> </u>	<u>78</u>	<u>20</u>	
May	<u>3.45</u>	<u>1.96</u>	<u>2.0"</u>	<u>83</u>	<u>20</u>	Last freeze 5/28=26°
June	<u>3.44</u>	<u>3.38</u>	<u> </u>	<u>81</u>	<u>40</u>	
July	<u>2.70</u>	<u>2.48</u>	<u> </u>	<u>88</u>	<u>44</u>	
August	<u>1.69</u>	<u>1.86</u>	<u> </u>	<u>96</u>	<u>40</u>	
September	<u>2.80</u>	<u>1.41</u>	<u>1.0"</u>	<u>76</u>	<u>26</u>	Hard freeze 9/26
October	<u>Tr.</u>	<u>0.80</u>	<u> </u>	<u>72</u>	<u>24</u>	
November	<u>0.23</u>	<u>0.65</u>	<u>1.0"</u>	<u>76</u>	<u>-5</u>	
December	<u>0.14</u>	<u>0.46</u>	<u>3.0"</u>	<u>56</u>	<u>-17</u>	
Annual Totals	<u>15.78</u>	<u>16.19</u>	<u>9.5"</u> Extremes	<u>96</u>	<u>-31</u>	

The 22 year average for precipitation is from Weather Bureau records at Garrison, N. Dak. Present weather data are from Snake Creek refuge, except for winter precipitation which is from the Corps of Engineers station at Riverdale.

Precipitation for the year was just slightly below normal. The wet months, during the growing season, were wetter than usual and the dry months were drier than normal. Precipitation at the right time, with a cool summer, resulted in an excellent growth of vegetation; the fourth year in succession.

An extremely severe blizzard occurred on December 16-17, 1964 (previous to this report). This was followed by a prolonged cold spell in January and early February. Cold weather, eight^{to} ten inches of snow on the ground, and more wind than usual made it a rough winter for wildlife. The refuge entrance was blocked on two occasions, and Alton Burgeson, clerk, missed several days of work by being snow-bound at home.

Spring was late, with snow persisting into May, ice not going out until May 1, and one final hard freeze and snowstorm on May 25-26. June, July and August were all livable with normal to cool temperatures and adequate rainfall. There ~~was~~ ^{were} no bad storms at this time but a hard hailstorm hit the east end of the refuge, causing some crop damage.

September was cold, wet and windy. First snow for the fall came on Sept. 16. The first hard frost was Sept. 26. October was mild and dry, with only a trace of precipitation. November was cold and stormy, although precipitation was below normal. December was mild, calm and with below normal precipitation; there was only seven inches of ice at the end of the period, with a few open holes at ice heaves on the pool. Frost free days ran from May 28 to September 26, for 121 days of growing season.

B. Habitat Conditions

1. Water. Snake Creek pool was 1.7 feet (1828.70) below the previous high water level at the beginning of the year. The spring run-off brought the pool up about six inches in May; this level held fairly well until August when it dropped six inches due to evaporation.

Garrison Reservoir reached a peak of 1844.8 feet in October. Because of the 15 foot differential it was necessary to raise Snake Creek pool to 1829.5 in September. With normal conditions Garrison reservoir is expected to reach 1850 in 1966, and possibly fairly early in the summer. Preferably we would have liked to raise the pool to 1835 in the fall or winter of 1965 to avoid flooding waterfowl nests; however, the State Game and Fish Department had not completed their dike work in time. The compromise was to raise the pool one foot (to 1829.5) in September, two feet to 1831.5 in November, and to 1834 in late March, 1966.

At this time it appears that Garrison Reservoir will be drawn down too low to run any water in, in March.

Net gain in Snake Creek pool for the year was 2.65 feet. Pool elevation at freeze-up was 1831.35. Spring breakup was unusually late this year, with the last ice going out May 1. Freeze-up came on November 29, unusually late.

The Corps of Engineers repaired the riprap on the embankment in September. Erosion on the islands is still relatively minor. Worst erosion is on open, windswept shorelines which have been farmed at one time; on sheltered unbroken shorelines there is no erosion.

This was the second full year, or 27 months, of operation with water level in the 1830 range. There are a few obvious biological relations at this time.

a. Both submerged and emergent, and moist soil aquatic vegetation continue to thrive and spread. There were several small patches of sago pondweed in areas where we had never seen them before. Many of the islands, and the main shore, have a fringe of hardstem bulrush and cattails appearing. In sheltered bays cottonwoods and willows are thriving, with some over six feet high already.

b. Coot use on the refuge has declined considerably in two years, probably because of the lack of flooded vegetation available. Use by fish-eating birds such as pelicans, grebes, gulls and terns is increasing.

c. Insect hatches during the summer are still very high, particularly from the mud bottoms of old alkali sloughs.

d. Migratorial use by ducks remained static, molting use decreased slightly, nesting use of islands decreased considerably, largely due to predation.

2. Food and Cover. This has been the fourth good growing season. Moisture was more than adequate, with temperatures on the cool side. Upland vegetation cover is still very good. Some of the old go-back fields still have weeds five and six feet high. One island of about 100 acres, north of headquarters, had an excellent stand (3 feet high) of Russian thistles, alfalfa and sweet clover; thirteen deer wintered on this island in two feet of snow. Winter cover was just barely adequate for deer in early 1965, but not good enough for pheasants and gray partridge.

We have a good variety and dispersion of nesting cover for upland game birds and field nesting waterfowl, from shortgrass native prairie through tall annual weeds. About the only types of cover in which we are deficient is emergent aquatic vegetation, and timber. The two northeast sloughs had about 150 acres of bulrush, which is well used by molting and nesting ducks. There is a potential for several hundred acres of this type of habitat.

Sago pondweeds have appeared in small patches in Sec. 39, south of #2 island; in Secs. 2 and 35; considerable amounts in Sec. 25, and small amounts in Sec. 29 and 30. No dredging or sampling was done this year, and no other submergent species were noted. Filamentous algae was common early in the season, but from mid-July until mid-October blue-green algae was so thick as to completely hide any other vegetation. There seemed to be no side effects from the algae bloom - there was no fish kill or other wildlife loss.

II WILDLIFE

- A. Migratory Birds. There were a number of changes in waterfowl use of the refuge the past year. The resident Canada goose flock continues to grow, which accounts for a significant change in goose usage. The use pattern for both geese and swans changed considerably in 1965, in migrational use and summer residence. Coot use dropped off during the summer of 1965, to nobody's great sorrow, but the fall migration was about the same.

Whistling Swans: None were seen in spring migration in 1965, and there was no summer use. Fall migration consisted of three flocks of 50, 37, and nine birds. State Game and Fish employees brought in a sick swan at the beginning of the year but it died within a week; very likely from lead poisoning from the symptoms.

Canada Geese: The migrant flock of large Canadas stopping here in the fall continues to grow. There was a peak of 500 large Canadas in early November, compared with 250 in 1964 and 1963. Use by Canada geese almost doubled from 16,000 use-days in 1964 to 29,300 in 1965. This is in part because of the larger refuge flock. Peak numbers and use by little Canadas

also increased, with 50 here in the fall of 1964, and 100 in 1965. There was some spring use by little Canadas in 1964 but none in 1965. It should be noted that we have two distinct flights of the Canada geese with very little or no mixing. The little Canadas stay in the east part of the refuge, feeding in farm units on the east end or flying out to the east. This flock tends to associate with the white-fronts, and the few snow and blue geese we have. In fact the only two snow-geese seen in 1965 were with the flock of little Canadas.

The flock of big Canadas stay on the west part of the refuge and mingle with the refuge flock of geese. In the past we have seen a few color marked geese from the Upper Souris flock in this group and it is possible this group is all or in part from Upper Souris refuge. It would be worthwhile trapping some of these geese to see if any are banded and where they are from.

White-fronted geese, Blue and Snow Geese: The white-front migration was the lowest recorded here in years, very likely because of the weather. A peak of 37 was seen with a group of 15 here for two weeks. Only the two snow geese with the little Canadas were seen, and only on one occasion.

Ducks: Mallard use was down during the spring and summer, but the fall^{use} was almost the same as in 1964. Nine mallard broods were seen in 1964, 19 in 1965. Summer use by the molting flock of pintails, gadwalls, baldpates and green-winged teal dropped off considerably this year, from the peak of 10,000 in 1964. About 3,700 ducks was the peak summer population. Conditions on the refuge appeared to be the same in both years, however there was a lot more water in sloughs and pot-holes this year and very probably a lot of ducks used these sloughs. Scaup use seems to be declining every year. We had a peak of about 2,000 for just a short time this fall, and with only 100-200 through most of September and October.

Duck production on the refuge was only fair this year. We had a total of 150 broods calculated compared with 226 broods in 1964. Again the water conditions outside the refuge probably had much to do with it, and the bad nesting loss on islands (see Sec. V - Island Nesting Study). Gadwalls were the most abundant in broods with 21 seen, mallards with 19, pintail with 11, and all others with 14 broods.

TOTAL WATERFOWL DAYS USE, JAN. 1-DECEMBER 31

	<u>Swans</u>	<u>Geese</u>	<u>Ducks</u>	<u>Coots</u>
1960	112	20,783	1,024,450	165,950
1961	258	10,600	128,600	51,050
1962	0	30,050	1,494,520	176,620
1963	785	38,660	2,897,000	227,360
1964	1400	40,125	2,123,000	330,920
1965	1820	48,865	1,240,000	150,900

PEAK NUMBER OF WATERFOWL (Fall migration)

	<u>Swans</u>	<u>Geese</u>	<u>Ducks</u>	<u>Coots</u>
1960	15	112	11,000	4000
1961	40	108	1,100	500
1962	0	825	32,850	3300
1963	75	850	86,270	8000
1964	114	622	21,370	4000
1965	50	500	19,500	3000

CANADA GOOSE PRODUCTION (Class III-flying)

1960 - 4	1963 - 15
1961 - 1	1964 - 19
1962 - 11	1965 - 30

The refuge flock of Canada geese continues to increase. There was only one more goose nest this year over last year (eight nests in 1965, seven in 1964), but hatching success was phenomenal. This is in contrast to reports from the Souris loop refuges, and nearby private goose flocks. In four nests in the pens, there were 21 eggs laid and 20 hatched. The pair nesting in the west pen laid, hatched and raised seven goslings to flying stage. This same pair hatched seven and lost one gosling in 1964 (by accident), and hatched six in 1963.

One pair of geese nested on an island just off the conduit on the State area. The State area was opened for fishing May 7. From reports I had later this poor goose had visitors all day long the first weekend of the fishing season, which kept her off the nest most of the time. On the post-hatching check there were four eggs remaining in the nest with dead embryos, and one hatched egg.

Another goose had a brood of six goslings on the north end of old Mud Lake, in Sec. 32. The nest was never

found but it would be $3\frac{1}{2}$ miles from headquarters, indicating the nesting birds are spreading throughout the refuge. Another nest was found on island 24 in Sec. 25 in an area not used by geese before. This nest had five eggs, all of which had been rolled out of the nest two or three feet, but none were broken and there was no sign of destruction. Three eggs were fertile. A gadwall was incubating her nest on the island at the time it was checked.

We are getting a summer migration in our goose flock. In 1964 nineteen geese, presumably yearlings or non-breeders, disappeared in late April and did not return until early September. This year 33 geese did the same thing. We assume they are going north into Canada, and that they are non-breeders, but the question is whether they will remain here to nest at maturity.

Water and Marsh Birds: Populations of water and marsh birds seemed to follow the trend of ducks - there was a slight falling off in both residential and migratorial use by most species. A peak of 200 Western Grebes were here in 1964, with about 20 nests. This year there were about 80 Western Grebes here in June, and not over 150 at the peak in August. Eared grebes were common during the summer, horned grebes and pied-billed grebes were scarce.

The double-crested cormorant colony is still increasing with a maximum of 500 on the refuge at times. Pelicans remained about the same, or with a very slight increase.

There is so much movement between the refuge, the State area, the reservoir, and to the east that figures don't mean much. An occasional great blue heron is seen, but they are not resident on the area. The colony of black-crowned night herons remains the same, in the northeast bulrush slough. No bitterns were seen or heard this year. A loon was heard and seen on June 1. One loon a year is getting to be almost standard.

Sandhill crane use of the refuge dropped off considerably. Spring use is erratic and weather-dependent; but fall use this year was erratic and temporary. One flock of 200 was seen the first week of September, later a flock of 36 was seen.

Shorebirds, Gulls and Terns: Four Bonaparte gulls were seen on the pool at the new goose pen October 28; this is a new record for the refuge. There was a big

shift in nesting use by common terns again, to the large low island on the east side of old Mud Lake. They made a nesting attempt on the islands they used last year but mink disturbance apparently caused them to move. There was an estimated 200 common tern nests on islands.

Avocets and Upland plovers seemed to be very abundant this year. Several broods of upland plovers were seen in early July. Almost every island has one or more avocet nests. Marbled godwits are decreasing, probably because more of their low wet meadow is being lost. They don't seem to adapt to the islands as the avocets do.

The fall flight of Franklin gulls is also decreasing, although we had about the same number as in 1964.

- B. Upland Game Birds. Sharp-tailed grouse seemed to have wintered fairly well with no great loss. Only three dancing grounds were checked this year, with practically the same counts as in 1964. No broods were seen this year. Random observations during the fall indicated about the same population as in recent years.

SPRING DANCING GROUND COUNT

	GD.1	2	3	5	7	8	Total
	M-F	M-F	M-F	M-F	M-F	M-F	M-F
1961	6	16	10	13	14	-	59
1962	2-0	15-1	4-0	21-35	13-0	-	55-26
1963	5-2	18-2	0	Trapping	Trapping	-	23
1964	4-1	0	0	16-2	6-4	7	26-7
1965	?	0	0	15-2	8-4	3-1	26-7

Females not recorded 1961

Eight grouse flushed on one count, no sex ratio.

Ground No. 1 was not checked in 1965 because it is on an island. There was very little indication of use in late May. Grounds #2 and 3 have apparently been abandoned since 1963.

Gray partridge suffered severely in January and February. There were two coveys at headquarters, of 25 birds. By spring they had diminished to 12 partridge. Other coveys around the refuge seemed to be as bad. There

seemed to be little reproduction either. The same coveys have about seven to eight birds each at the end of the year, compared to 12 to 18 a year earlier.

Ring-necked pheasants were almost eliminated on the refuge. Two roosters have been seen between the headquarters area and the tree planting $\frac{1}{4}$ mile east, and two roosters have been seen a few times in Sec. 12. There are probably two to five pheasants on the east end of the refuge. One hen has been seen, but no broods. The pheasant situation is at about the same point it was in 1959 - very, very scarce.

- C. Big Game Animals. White-tailed deer were back to the high figures of 1959. There were some fifty to seventy wintering in Sec. 17, 13 in the millet field and tree planting at the Fox place, and 13 on #2 island north of headquarters. There probably were more on the refuge because the State came up with 175 deer on their aerial count. The area which they counted was not specified but presumably it was the refuge. For some reason deer winter on the refuge - possibly because of the good food supply and cover - and spend the spring and summer off the refuge. A good question is what the carrying capacity of the refuge is. Nobody seems to have any idea, and we probably never will know.

There was no known winter loss on deer. The population at the start of the hunting season was estimated at 70 to 100; at the close of the year about 35 to 40. The deer kill during the hunting season was:

Bucks		Does		Unid.	Found dead	Total		
<u>Ad.</u>	<u>Fawn</u>	<u>Ad.</u>	<u>Fawn</u>	<u> </u>	<u> </u>	<u> </u>		
21	9	12	6	2	2	52		
Total estimated kill is about 55 deer.								
		<u>1960</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>Ave.</u>
Known kill								
Known kill		41	47	15	13	38	52	34.3
Est. kill		50	50-55	17	15	42-45	55	38.3

Pronghorn antelope have stabilized for the last two or three years. The herd of about 35 to 50 antelope tends to stay on the refuge the year-round now. There were 48 antelope wintering immediately north of headquarters in January and February. In two months four died. One was turned over to the State Pathologist who

reported it had epidemic hemorrhagic disease. I think the severe winter stress also was contributive; as soon as the weather eased there were no losses. Contrary to reports on livestock, the winter seemed to have no effect on reproduction. One set of triplets was seen.

The State Game and Fish Department issued 50 antelope permits for this area. There were 24 antelope taken on the refuge, and five just outside. At the end of the year there are about 40 in the headquarters area, and eleven on the east end. This includes 20 that came over from Mallard Island after the hunting season closed. There has been no winter loss of antelope in December.

D. Fur Animals, Predator, Rodents and Other Animals.

No beaver have been seen since the fall of 1963. Muskrats are still very scarce, but increasing slightly where they have vegetation. A few are seen about the refuge where there is no emergent vegetation; obviously bank rats. Mink have increased, during the summer months, to the point of being a nuisance. Out of 32 islands searched in July for duck nests, ten had active dens or some indication of predator activity. Mink tracks were common along shorelines on about half of the islands during the summer. There is very little sign of winter activity, probably because the mink move out during the winter.

Raccoons are still fairly abundant. Tracks are common along certain parts of the pool, and we invariably have an influx into the headquarters area when plums are ripe. Skunks are also very abundant. Seven were taken in traps at the goos pen, my dog killed three or four, and I take pride (in my pitching arm) in killing a few by throwing stones. Skunks are present on the larger islands and we should put on an intensive elimination program for them.

Foxes are at about the saturation point. About 10 or 12 were killed, either by trapping or as pups, but such control didn't even make a dent in the population.

Jackrabbits were abundant the first part of the year, but are quite scarce at the end of the year. There was no sign of winter loss. Market hunters have taken so many jackrabbits locally they are very scarce outside the refuge.

Last year the mouse population was low but they are recovering now. Mice were more abundant this fall,

and there have been quite a few signs of foxes and skunks digging out mice.

- E. Hawks, Eagles, Owls and Crows. Our winter resident golden eagle wasn't much of a problem from January until March, at least it didn't seem to bother the geese any. The first golden eagle for the fall was seen November 3, and one and rarely two have been seen at irregular intervals since. No bald eagles were seen at all this year. This is unusual because we always used to get from one to three during the deer season.

A pair of rough-legged hawks again nested at the Hagerberg place, probably the same pair as last year. Unfortunately we haven't followed up the nesting to see what success they had. Sparrow hawks were more common than usual in the spring and fall migration. A duck hawk was seen twice in October - probably the same one, and possibly the same one that was seen in 1964. Marsh hawks are not as abundant this year.

Supposedly snowy owl invasions are cyclic; however we have had snowy owls here in good numbers for the third winter now. Eighteen were taken in pole traps at the goose pen from November, 1964 to March, 1965. As many as six were seen on November 20. One horned owl sat down in a pole trap after he had killed a goose in the pen. This is the first record we have had of a horned owl killing a goose. Snowy owls have flown over the pen and the geese are alert, but don't fly. However all the mallards in the pen move out immediately. One screech owl was seen on the refuge April 3, which is a new record for the birdlist. Short-eared owls have been rather common this fall and winter after being scarce for several years.

A burrowing owl has been seen several times on the Hummel place just outside the refuge. This is probably the same one, or same family, which nested on the road shoulder in 1961.

There was a good flight of crows through the refuge in early October, right on schedule. About 150 to 200 were here for a few days.

- F. Other Birds. One of the encouraging developments is the number of new species we have nesting or remaining through the summer in recent years. Song birds seen or heard in tree plantings during the summer were:

June 27 - Yellowthroat
July 6, 7, Sept. 2 - Goldfinch

Brown thrashers and robins are almost common now. Purple martins have been here for two summers but have not nested yet. Five or six years ago these birds were very rare on the refuge. Other new species recorded this year are:

May 10 - American pipit
Oct. 28 - Bonaparte gulls
Nov. 19 - A male white-winged cross-bill was found dead outside the office.

- G. Fish. There are fish in Snake Creek pool and that is almost the extent of our knowledge as far as the refuge is concerned. Carp were seen schooled at times in shallow water. They were working in the bulrush slough in Sec. 33 when we were duck trapping there.

On the State area, which would have similar fish populations, northern pike were taken up to 15 pounds, but averaged four to five pounds. At times perch and crappies up to ten or 12 inches are taken. To my knowledge none of the other species previously reported in the pool have been taken.

Bill Daugherty, Fishery Mgt. Biologist, put 2,000,000 northern pike fry in the slough at the Wertz place (Sec. 6) in the spring. He recovered about ninety in the fall for restocking. The State Game and Fish Department tried to salvage some and got about thirty. The State Game and Fish Department stocked 1,159,000 northern pike fry on their part of Snake Creek pool; to my knowledge, that was all the fish management on Snake Creek pool this year.

- H. Reptiles and Amphibians. There is practically nothing to report in this category. Spring peeper and leopard frogs were common in the sloughs during the spring and summer. An occasional garter snake was seen. We have no records of turtles or other reptiles.

III PHYSICAL DEVELOPMENT AND MAINTENANCE

- A. Physical Development. There was no construction work other than O&M projects during the year. A major project was the relocating and rebuilding of the entrance road.

Water Management

1. Ran level on low areas, Sec. 4, Sec. 3 to determine benefit of low level dams.

Roads and Trails

1. Eight man days on snow removal, putting up snow-fence, ridging snow in fields.
2. Mowed all refuge trails, graded trails and roads as necessary.
3. Cut brush, sprayed brush (See Pesticide control) in ditches. Volunteered one day off-duty time to cutting brush on road to town.
4. Spot graveled holes in road east to Fox place.
5. Relocated and built new entrance road. A new entrance at the southwest corner of Sec. 3 was made, a 24 foot cattle guard installed, a new refuge sign erected. The advantages are: A more attractive entrance road, a safer entrance (away from the lip of the hill), more clearance under telephone lines, a more scenic entrance road, and a snow-free road.
6. Graveled entrance road with 300 yards crushed gravel.
7. Leveled, ~~diced~~ and seeded road shoulder and ditch of new road.

Fencing and Posting

1. Made fence post driver for stake truck (Incentive Award Sug. 3).
2. Made 10 styrofoam buoys with boundary signs. Buoys are 2 feet x 30" x 1" thick, with fluorescent red boards 10" x 30" below the sign. The buoys are visible up to one mile on the water. After one season in the water there should be little maintenance required other

than annual painting of the fluorescent red. The buoys were put out in the spring and retrieved just before freeze-up.

3. About one-half mile of boundary fence on the north side (Sec. 29) was removed because the slough will be flooded at 1835.0 water level.

Buildings & Structures

1. Office walls on the gable end were replastered, interior repainted. Water came through again in the spring and the walls will have to be re-finished if we can ever lick the water problem.
2. Cracks in plaster (from house settling) were patched, part of interior of residence painted.
3. Exterior trim of all buildings was painted.
4. New pipe standard for the mercury vapor yard light was made.
5. Heating furnaces in both office and residence were serviced, limit thermostat on office furnace replaced, new oil pump on residence furnace.
6. New relay switch for the shallow well pump. The old relay burned out when the well was pumped dry.
7. Installed a second fluorescent light in the shop.
8. Installed fiber glass panels in shop door which lightened the shop and lightened the door.

Cropland Management

1. Mapped and staked out new field boundaries for farm units A-2, A-4, A-5, A-6, A-7 and A-9. Staked out new replacement units for units A-7, A-5 and A-9.
2. Pruned and cultivated tree plantings at headquarters.
3. Acquired surplus grain binder, cut, shocked and stacked 14 acres of barley and durum. See Sec. V - Winter Feeding.

Marsh and Water Management

1. Built new goose pen, diking off two bays on pool. This was necessary because we have been getting

pinioned geese from the Carl Smith flock at Devils Lake, and there was too much territorial fighting in the old pen.

2. Transferred 20 geese from Sullys' Hill (ten wing-clipped geese from Sully's Hill, ten pinioned geese from Carl Smiths' flock). These are "giant" Canadas if any are; an 8# goose band will just barely close around the leg of nine month old males.

A good start was made on a refuge herbarium, with about 70 plant species collected. A list of the plans, reports and other written information worked on during the year is:

- Pesticide Spray Plan
- McCown's Longspur Status-H. Krause
- Data Sheet-Refuge
- Annual Expenditures-Corps of Engineers
- Annual Water Mgt. Plan-RO
- 4 Quarterly S&M Reports
- Annual S&M Report
- Fishery Management Plan
- Revision of Refuge Leaflet
- Program Schedules
- Annual Narrative Report
- Report on Mechanical Work
- Annual Management Plan-Corps of Engineers
- Revision of Land Use Plan
- 4 Reports for Audubon Society (Winter Notes, Nesting Notes, Spring and Fall Migration)
- Real Property Inventory
- Personal Property Inventory
- Justification for Farming - CE
- Annual Work Schedule
- Report on Beautification of Grounds
- Land Classification Questionnaire
- Safety Hazard Inventory
- Special Regulations for Fishing
- Annual Water Program - CE

B. Planting

1. Aquatic and Marsh Plants - None. We checked on bulrush plantings made along shoreline in 1964, but there was so much volunteer growth it was impossible to say definitely which was volunteer and which was planted. Obviously no planting is necessary except in certain spots.

2. Trees and Shrubs. The following trees and shrubs were planted in the headquarters area for landscaping. Stock was obtained from Talbot Nursery at Burlington. Survival was 100% except for one Nanking Cherry.

2 Nanking Cherry	6 Spitzer Juniper
2 Ponderosa Pine	6 Annual Spiraea
1 Russian Mulberry	

3. Upland Herbaceous Plants

a. Approximately one acre of roadside ditch and shoulder along the new entrance road was seeded to crested wheat grass. It was drilled in just before freeze-up.

b. About 55 acres of cropland in the farm units were seeded to crested wheat grass and sweet clover, and retired. This was in Units A-2, A-4, A-5, A-6, A-7, and A-9. Generally it is the portion of these units lying within 200 yards of the water.

4. Cultivated Crops. The 1965 crop was the fourth consecutive good crop year. The farm units have been reduced to about 2300 acres, as compared with 2800 acres in 1960. This should remain static until Garrison Diversion project floods us out, about 1971.

The refuge grain bin was cleaned out in 1965, and refilled with barley. This was the refuge share from A-27 and A-28 units. All other refuge shares were left standing or swathed.

One field of corn was planted in A-4 unit, but again it was stopped by frost just 2 weeks from maturity. For wildlife usage, we may as well concentrate on millet - deer, grouse and dickey birds seem to utilize millet almost as well as corn.

Farm units A-6 was reduced to 118 acres, A-7 in Sec. 2 was eliminated and 85 acres of go-back and quack grass was re-broken in Sec. 6 and 7. The half of A-9 in Sec. 5 was retired, and the half in Sec. 8 will be retired in 1966. A corresponding amount of go-back in Sec. 9 will be cropped.

A-5 unit has been reduced from 300 acres in Sec. 1 to 142 acres and 97 acres were added in Sec. 12.

A-2 unit has been reduced to 95 acres, A-4 to 204 acres. All these acreages are only approximate, as we have not been able to get a good field measurement of them since reduction.

Cultivated Crops Grown	Permittee's Share Acres	Harvested Bushels	Average Bushels Per Acre	Acres Grain Left for Refuge
Wheat	488	12,771	26	6 (stacked)
Barley	300	11,755	39	366 (8 a. stacked)
Oats	66	3,550	55	0
Rye	103	2,030	20	6
Corn	0			34
Millet	0			20

C. Collections and Receipts

1. Seed or other Propagule. 1000 bushels barley from refuge share of farming, for feeding purposes.
2. Specimens
 - a. About 70 plant specimens have been collected for the refuge herbarium over the past two years.
 - b. One dying antelope was shot in January for diagnosis; it had epidemic hemorrhagic disease (EHD).

D. Control of Vegetation

1. One small patch of leafy spurge - the first on the refuge - was sprayed with 4½ ounces of Tordon in six gallons of water, in August. Results seemed to be very good, with no re-growth. We will follow up in 1966 with more Tordon.
2. About one acre of willow brush in road ditches were sprayed with 2,4-D and 2,4,5-T in water. Purpose was to eliminate brush and snow drifting on roads. There was a good top-kill but a follow-up spraying will be necessary for a few years.
3. Farm permittees routinely sprayed for mustard and other noxious weeds in small grain crops. The usual application is about one half pound of active ingredient 2,4-D in water, applied by ground spray. About 600 acres of small grain is sprayed annually.

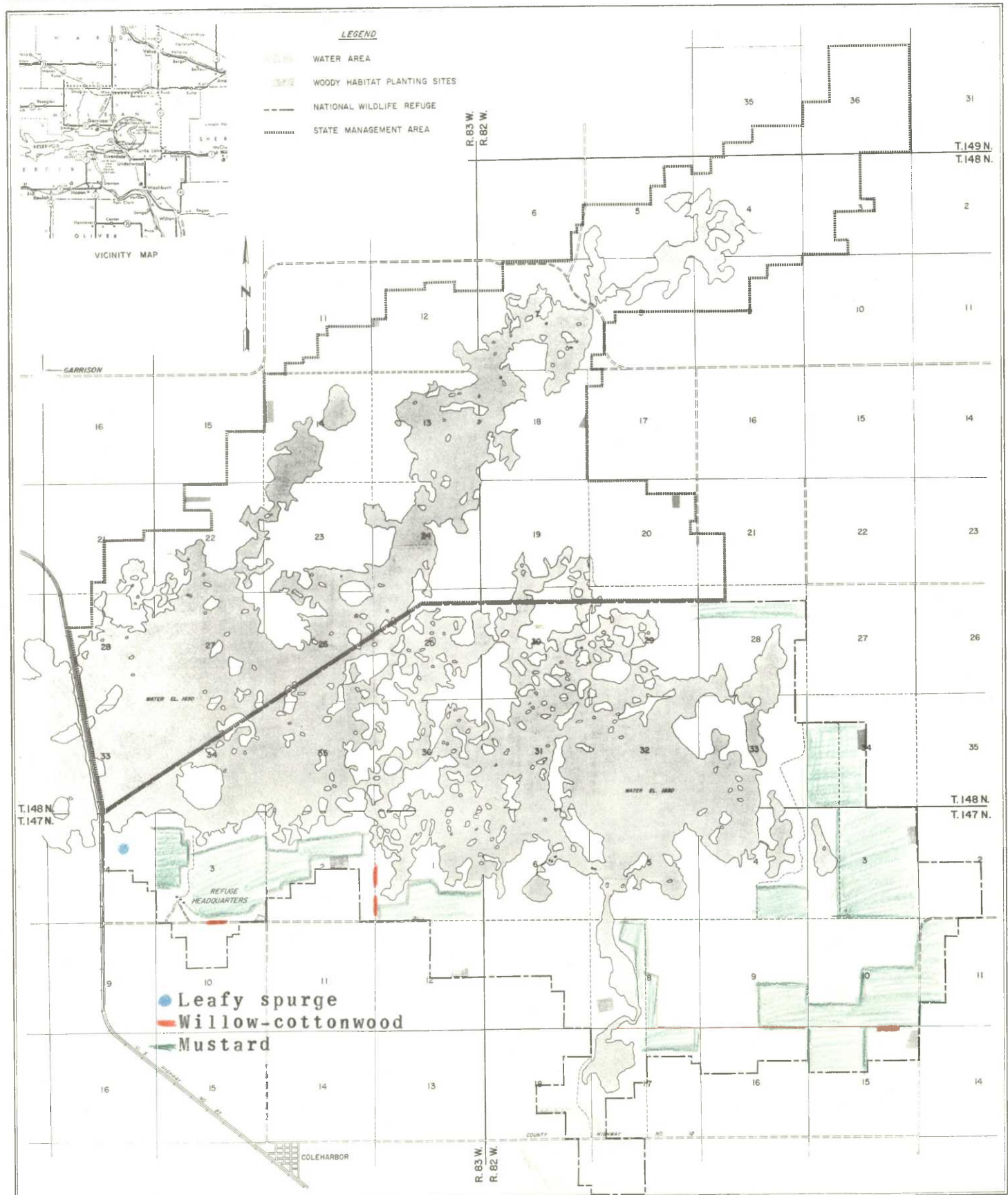
E. Planned Burning - None

Snake Creek National Wildlife Refuge

McLean County, North Dakota

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE



COMPILED IN THE BRANCH OF ENGINEERING

MINNEAPOLIS, MINNESOTA

NOVEMBER 1964

FIFTH PRINCIPAL MERIDIAN

Scale 0 1000 2000 4000 6000 8000 FEET

147 148 149
17 18 19
20 21 22
23 24 25
26 27 28
29 30 31

TOWNSHIP
DIAGRAM

MEAN
DECLINATION
1960

F. Fires - None

IV RESOURCE MANAGEMENT

- A. Grazing. All three grazing units were used this year. All are in good condition. Stocking rate was not to exceed 52 AUM's on G-1 unit, 32 AUM's on G-2, and 92 AUM's on G-3. The Corps of Engineers issues the grazing permits and collects the receipts. Grazing is according to our stipulations.

There was no other resource management or refuge receipts.

V FIELD INVESTIGATION OR APPLIED RESEARCH

- A. Captive Goose Flock. I would say that the refuge goose flock is now established and will grow, with some care and precautions. Four pair of geese nested in the pens this year, and four pair in the wild on the pool. Ten pinioned and ten wing-clipped geese were transferred here from Sully's Hill Game Preserve, and from Carl Smiths' flock. They will augment the production from the penned birds.

Thirty-six goslings were hatched, but six were lost, mostly through chilling in the extremely cold, wet weather in late May. We had 103 geese in the pen, presumably all local geese, in mid-September. This includes 14 pinioned or wing-clipped geese and the rest are all free-flying geese.

For the first time since 1959-60, we rounded up the non-fliers in mid-December and put them in the equipment shed. As soon as the grain in the goose pen was cleaned up, the flying geese left. January 1 was the last time they were seen. This is the first winter the geese have migrated. An interesting point is that at least three of the old Erickson geese which are pinioned, are mated to free-flying geese. These pairs were split up when we rounded up the non-fliers; the flying birds have left with apparently no regrets.

Seventeen goslings in the pen were banded July 16. Some of the Devils Lake geese were also banded at this time. We also put a yellow-plastic leg band on one leg or the other, using various combinations of two legs, the plastic band, and the standard aluminum band, to mark the pinioned geese.

- B. Nesting Island Study. We continued a nest search on the islands (170 at 1830 elevation) and all of them were numbered, and located on a map. We only had time to search 32 of the islands this year, and the results were not good. Duck production and use on the islands declined considerably, apparently due mainly to mink predation. A brief summary of the results are:

Islands searched	32
Incubating nests	18
Hatched nests	2
Deserted nests	1
Islands w/no nests	17
Islands w/some predator activity . . .	9

- C. Banding. Resident geese were banded as mentioned in A above. One drive was made for molting ducks on the bulrush slough on the northeast end. This is the same slough on which we trapped between 1500 and 2000 ducks in 1964. Under the same conditions we trapped only 278 ducks this year. All were adults, mostly pintails, green-winged teal, and mallards, in that order. About the only thing evident so far is that use by molting ducks is anything except consistent.
- D. Aquatic Survey in Snake Creek Pool. No sampling this year, except for random observations.
- E. Refuge Tinkering - Grain Stacking. For years I have been intrigued by stories of the old times of grouse using grain stacks in the fall and winter, for feeding and roosting. We finally acquired a surplus grain binder, and cut and shocked eight acres of barley, and six acres of durum wheat in August.

We got the grain shocked, but September was cold and wet so there was no opportunity to stack the grain until October. Four stacks were made, at headquarters, the Fox place, the Sandberg place, and the slough in Sec. 10 just west of John Norland's place. Two stacks were barley and two of durum, for comparison of use.

The surprising thing was that as soon as the barley was shocked it was used so heavily by geese, ducks, deer and antelope there wasn't too much left for stacking. In fact about half was left in the shock because most of the grain was eaten.

For purpose of winter feeding, for which it was intended,

perhaps there is no need for stacking; shocked grain may be satisfactory. There were a few instances of deer carrying barley bundles 200 to 300 feet away. There has been relatively little use of stacks this winter, mostly because there is not much snow and swathed grain is readily available.

One problem in shocking grain is that the remains of the shocks will have to be removed from the fields in the spring.

Our next project is to try stacking grain in sloughs and along the edge of the pool, to provide winter feed and at the same time see if there is any nesting use of grain stacks by ducks or geese if the stacks are in a suitable location. We are also dropping durum as a winter feed and are going to try shocking and stacking millet.

VI PUBLIC RELATIONS

A. Recreational Use. Recreational use continues at about the same level. The two major uses are deer and antelope hunting. One of the national recreation surveys found that just plain Sunday afternoon driving was one of the major recreations - it is true here judging from the number of cars that drive into refuge headquarters on a weekend and either stop or drive out again. (Beer drinking, from the evidence, is the second). We have made no attempt to count these casual visitors but there must be several hundred in a year.

We have continued, on a small scale, conducting visitors on a boat trip around the refuge. These are particularly impressive if there is a large concentration of ducks present, and are well received.

B. Refuge Visitors

<u>Date</u>	<u>Name</u>	<u>Title or Address</u>	<u>Purpose</u>
1/18	J. Seeger	McLean Co. Park Board	Garrison Diversion
1/19	N. Nelson	Minot	Cloud Modification Sign-up
1/27	R. Hayer	"	Former employee, visit
3/6	B. Gondringer	Turtle Lake	Windmill Bid
	Ed Marko	Max	Goose flock information

<u>Date</u>	<u>Name</u>	<u>Title or Address</u>	<u>Purpose</u>
3/30	T. Dvorak	Minot AAO	Wetland Acquisition
	S. Murrell	" "	" "
4/4	E. Marko	Max	Geese
4/5	F. Kregge	Sand Lake Refuge	Deliver sign posts
4/19	T. Schauer	Slade Refuge	Pick up poles, snow fence
	D. Meissner	Garrison High School	Sharptail Grouse Observations
4/29	J. Carlson	Minot AAO	L. Nettie Land Acquisition
	C. Estheimer	" "	
4/30)	D. Meissner &	Garrison High School	Grouse Observations
5/10)	30 high school students in groups of six		
5/7	B. Daugherty	F.M.S., Bismarck	Fish Mgt.
	P. Hooper	" R.O.	" "
5/14	L. Swenson	Minot AAO	Borrow canoe
5/15	J. Stockdill	Garrison	Work application
5/19	J. Winship	Pilot-Biologist, R.O.	Aerial photos
6/3	Mr.&Mrs.C.J. Henry	ex-Bison Range Mgr.	Visit, tour of refuge
6/4	D. Anderson	Underwood	Cormoran ⁺ -pelican study
6/9	R. Randall	RBS Bismarck	Visit, information
	B. Sweeney	" Billings, Montana	" "
6/15	C. Rollings	Refuges, R.O.	Inspection
6/21	A. Krumwiede	Underwood	Fencing, grazing, L. Nettie
7/11	A. Klain	Turtle Lake	Grazing, L. Nettie
7/13	J. Carlson	Minot AAO	Land Acquisition, L. Nettie
7/31	Mr.&Mrs. O. Swenson	Long Lake Refuge	Surplus material, visit
8/3	A. Bratz	Coleharbor	Grader repairs
8/24	E. Murray	Riverdale	Fur trapping
8/28	E.J. Smith	Refuges, R.O.	Inspection
9/9	J. Carlson	Minot AAO	"show-me" tour
	T. Dvorak	" "	" "
	L. Swenson	" "	" "
9/11	H. Bradley	Des Lacs Refuge	Return GM duck Trap
9/14	L. Britton	Turtle Lake	Grazing, L. Nettie
9/15	Foreman, J. Mayo, Const. C. Moyes	Cavalier, ^{N.D.}	Gravel sale
		Riverdale, CE	Water level

<u>Date</u>	<u>Name</u>	<u>Title or Address</u>	<u>Purpose</u>
10/2	C.D. Platt	ex-CE, Omaha	Visit
10/5	50 10th Graders	Garrison High School	Tour of refuge
10/12	L. Britton	Turtle Lake	Cattle trespass
10/20	S. Enger	G&F Dept. River- dale	Salvage northern pike
10/23	A. Klain	Turtle Lake	Cattle trespass, L. Nettie
10/25	D. Kastner	Garrison	Work application
10/26	R. Wright	G&F Dept. Riverdale	Violation Report
11/1	G. Eslinger	Garrison	Work application
11/2	A. Krumwiede	Underwood	Grazing, L. Nettie
11/2	B. Daugherty	FMS, Bismarck	Fish management
11/30	C. Estheimer	Minot AAO	Rental Survey
	C. Davis	" "	" "
12/10	D. Krumwiede	Underwood	Unemployment claim
" "	J. Schlafman	Turtle Lake	Land for wetlands

In addition, the three Game Management Agents, H. Jensen, J. Waters, and V. Blazevic were in at almost weekly intervals. Personnel from Garrison Dam Hatchery made many visits. Other more or less regular visitors were: George Enyeart, Game & Fish Dept., Riverdale; Ralph Wright, State Warden at Riverdale and eleven farm permittees.

VII OTHER ITEMS

A. Items of Interest

1. Refuge personnel held a picnic on the refuge July 17, for refuge and fish hatchery employees. Purpose of the picninc was to give refuge and fish hatchery families a chance to know the refuge better. There were 17 adults and 13 children present.
2. Garrison Diversion project has been authorized by Congress, and \$2,000,000 is being asked for F. Y. 1967 development. If it stays on schedule, they will begin filling Snake Creek pool in 1971. The master plan and development of Snake Creek refuge will have to be advanced to get the development completed before 1971.

3. The Miller-Parker Co. of Garrison has started a development on the north side of Snake Creek, adjacent to Fort Totten Trail State Park. They have 39 lots staked out, and are planning on putting in a restaurant, bar, and gas station. They have an attractive location, and this could be an asset to the area, if properly developed.

All of the Snake Creek Cabin Site lots (Corps of Engineer development on the upper end of Snake Creek) have been sold. Four cabins were moved onto lots this year; there was more activity in 1965 than in the previous ten years.

4. Alton Burgeson, refuge clerk, resigned his position October 13 to go to work for a trucking company.

B. A series of photographs are included following the NR forms. All were taken by the refuge manager and black and white photos processed by him.

C. Refuge Participation

<u>Date</u>	<u>Personnel</u>	<u>Where</u>	<u>Purpose</u>
1/12	McGlauchlin	Minot AAO	Local refuge, AAO meeting
1/28	"	Garrison Sports-men's Club	Showed slides at Annual dinner
1/30	"	Bismarck	N.D. Wildlife Federation meeting
2/8-11	Boots	Jamestown	M&E Workshop
2/17	Boots	Washburn	SCS meeting on
	Burgeson	"	ACP"G" practices
	Fries	"	"
3/4	Boots	"	Civil Defense
			RAD. Monitoring
3/22-25	McGlauchlin	Minot	M&E Enforcement
	Burgeson	"	Workshop
	Fries	"	"
4/1	Boots	Minot AFB	Fire fighting,
	Burgeson	" "	Demonstration
5/26-27	McGlauchlin	Ft. Meade, S. Dak.	Pick up surplus grain binder
7/30	"	Riverdale	N.D. Chap. meeting
			Wildlife Society
9/14	"	Minot	VFW smoker
10/18	"	Bismarck	Inter-agency Council Meeting
12/2	McGlauchlin	Garrison	Welding clinic and demonstration
	Boots	"	

D. Hunting. The refuge was open to antelope hunting from noon, Sept. 17 through Sept. 26 for a 9½ day season. There were 24 antelope taken on the refuge and five just outside the refuge - all part of the same herd. Eighteen antelope were taken the first half day, two the second day, and four the third day. There was no hunting that we know of on the refuge the remaining seven days.

The State issued 50 antelope permits for this unit.

The deer season ran for 9½ days, from November 12-21. The known deer kill was 52, including two found dead later. The estimated kill is 55. This is the highest deer kill we have had in seven years of deer hunting on the refuge. Composition of the kill was:

<u>Bucks</u>		<u>Does</u>		<u>Unid.</u>	Found dead
<u>Adult</u>	<u>Fawn</u>	<u>Adult</u>	<u>Fawn</u>	----	later
21	9	12	6	2	2 = 52

The State Game and Fish Department closed a large area around Snake Creek to all goose hunting. This was to protect the refuge flock, and to encourage and build up the migrant flock of Canadas and white-fronts. It will be closed for three years.

E. Violations

1. Earl Steidler, Jr., Mandan, taking Canada goose in closed area for goose hunting. Disposition: Juvenile, letter of reprimand from juvenile commissioner.
2. Percy Radke and Jack Blotsky, both of Minot; driving in refuge, hunting in closed area. U. S. Commissioner refused to prosecute.

F. Safety. No formal meetings have been held, instead we use constant, on-the-job watchfulness and daily supervision. We started a new procedure of keeping a list of safety hazards and suggestions on the bulletin board; there were a few suggestions and typically they have been left to the other guy to correct.

Some of the safety hazards corrected, or preventive steps taken are:

1. Three new life jackets purchased.
2. Fluorescent red vests placed in all vehicles.

3. A grill guard was installed on Oliver tractor.
4. An extra fluorescent light installed in shop.
5. Deflector installed on front of 5' rotary mower.
6. Plug replaced on ½" electric drill.

The Safety hazard inventory was completed and read by all employees. I believe our greatest safety hazard is in driving. It would be worthwhile if all employees could go to a driver's school, or clinic, for correction of driving faults. There is nothing in this vicinity along this line though.

This station has not had a lost-time accident since it was established in May, 1955.

LAKE NETTIE REFUGE AND EASEMENT DISTRICT III A

LAKE NETTIE REFUGE

I. GENERAL

A. Weather Conditions

1. Water. Lake Nettie depends on run-off for its water, and on the water table elevation in that area. There was a good snow cover in 1964-65, but most of it went into the ground (probably keeping up the water table). On the surface only a trickle reached the lake.

The staff gauge came loose from the post early in the spring, so gauge readings are only approximate. Heavy summer rains raised the pool almost 18", to a peak of about 17.80. It dropped very slightly during the fall, and was at 17.50 at freeze-up.

Water Level

4/27 - 16.3	7/30 - Gauge moved, reset,
5/19 - 16.3	no reading
6/11 - 17.35	9/14 - 17.55
7/19 - 17.80	10/1 - 17.72

2. Food and Cover. Aquatic submergent vegetation is the weak point at Lake Nettie.

The lake itself has been too low and alkaline to support anything except widgeon grass (*Ruppia maritima*) in the past. The sloughs to the east, while not quite as alkaline, have a dark brown stain in the water. There are only traces of Sago in these sloughs. Otherwise there is an abundance of hardstem bulrush and cattails, and good grass cover on the upland. The clump of willow brush on the north quarter-line of Sec. 21, and the weedy jungles at the Krumwiede place are well used by deer and pheasants.

II WILDLIFE

A. Migratory Birds. Waterfowl use continues low. The surmise is that much of the duck usage, in both migration and summer use, has moved to Snake Creek Refuge.

An aerial breeding pair count was made May 19. This was an unusually windy day, with poor conditions, and only six pair of ducks were seen. We made a combination beat-out for broods and drive for molters on Jarvis slough on July 28. We counted 7 broods and trapped 11 ducks for banding.

Total brood count was:

	Mallard	Pintail	Shoveler	BW Teal	Can	Unid.	
7/19	1	2	1	1		1	
7/28	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	
7/		<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>2</u>	= 11

Eleven broods were counted, in three separate areas.

A peak of about 2000 ducks, consisting of mallards, baldpates, pintails, gadwalls, shovelers, and redheads were on the lake on July 19. On September 14 there were 400 ducks, 90% of which were baldpates, the other 10% were gadwalls and mallards. There was only one canvasback and one ruddy. There were 3000 coots on the lake at this time. October 14 showed ~~up~~ 25 shovelers, 7 ruddies, 100 pintails, and about 150 coots. There were 14 sandhill cranes present.

B. Upland Game Birds. Probably because of the excellent winter cover, pheasants came through the winter better here than elsewhere. From one to six are seen along the Krumwiede entrance road on every trip to Lake Nettie, and a few are reported to be around the Britton place. No broods were seen. I have never seen gray partridge around Lake Nettie and assume there are very few there. Three sharptails were flushed in the meadow on the north side of Sec. 16, in April. The entire Lake Nettie area looks like good sharptail country; there should be a dancing ground somewhere in the vicinity.

C. Big Game Animals. The excellent bird cover also benefits deer. As many as 13 deer were seen in the willow copse during the winter. A doe and 2 fawns were seen consistently during the summer in the same area.

D. Fur Animals, Predator, Rodents and Other Mammals.

An occasional fox and jackrabbit is seen on the area. Mink and coon tracks have been seen along shoreline. There hasn't been any sign of muskrat use.

E. Disease. At the time of drive trapping ducks, on August 3, there was a botulism outbreak, with an estimated 100 to 200 ducks sick or dead. Mallards and pintails seemed to be the hardest hit.

III REFUGE DEVELOPMENT

A. Physical Development

1. We put in a weeks' time in the spring and got the Krumwiede place pretty well cleaned up. This consisted of dumping all the typical abandoned farm junk in a basement hole, and taking out most of the barn and corral fencing.
2. The only other development was 1½ miles of fencing, mostly around the Krumwiede tract, and all involving grazing. A quarter-mile offence between Secs. 20 and 29 was put up by force account, to prevent stock trespass. Three-quarters of a mile around the L. Forland eighty was put up by contract. Art Krumwiede repaired and built three-quarters of interior fence as part of his grazing use.

IV RESOURCE MANAGEMENT

The only economic use at Lake Nettie is grazing, and it is a headache. The 1925 acres we have in fee title is all in grass and is good pasture. There is a strong demand for this grazing. Mr. Albert Klain, says that "if grass on Government land isn't being used, anyone has a right to it," and he has a strong conviction that he has the right.

Two grazing permits were issued, to former land owners.

<u>Permit</u>	<u>Permittee</u>	<u>Max. AUM's</u>	<u>AUM's used</u>	<u>Fee</u>
G3267	L. Britton	100	62.89	99.59
SU 6237	A. Krumwiede	129	124.9	189.86

VII OTHER ITEMS

A. Items of Interest. After three years land acquisition took another spurt. Tract 14, the west half of the NW¼ of Sec. 21, consisting of 80 acres was purchased from Les Forland July 19, 1965.

Eight hundred acres of school land was purchased from the State on August 16, Tract 2 consists of all of Sec. 16 and the SW¼ of Sec. 22.

About six quarters of land are needed to complete acquisition, but this is divided among five owners.

EASEMENT DISTRICT III A

Camp and Strawberry Lake. Water levels have remained stable at Camp and Strawberry Lake. It was either running over the spillway or at spillway level every time the lake was checked.

Waterfowl counts were made May 19 (aerial), June 11 and October 1.

	<u>Mall.</u>	<u>BWT</u>	<u>Shov.</u>	<u>Scaup</u>	<u>Coot</u>	<u>E. Grebe</u>
May 19	12	18	35	60	24	
June 11	3	3	1	5		1
Oct. 1						1

The October 1 count was made by the refuge clerk on the last day he worked, and is very questionable.

Cottonwood Lake. Water in Cotton wood Lake did not recede very much this year. A flash flood in 1964 filled the lake to overflowing; the two times it was checked in 1965 water was just below the spillway level. This is about five feet over our gauge.

Waterfowl counts were:

	Jan. 11	Oct. 1		Jan. 11	Oct. 1
Mallard	4	6	Ruddy	1	8
Gadwall	2		Bufflehead		2
Pintail		10	Western Grebe	15	
BW Teal	4		Coot		30
Scaup	10	6			

One pheasant was seen October 1. High water is starting to wash out the road at the spillway.

Wintering River. This area was checked three times during the year. Water level was up in the normal range. It was at 0.96 on July 19, and 0.84 on Oct. 1.

A pair count was made by plane on May 19 but the only ducks seen were three mallards and a pair of shovlers. It was an extremely windy day and probably a lot of ducks were in thick cover. No brood count was made; there is so little open water it is impossible to count broods.

On July 19 there were three redheads, five shovelers and two pair of blue-winged teal along the east shore, and a dozen mallard drakes were flushed. On Oct. 1 only two coots were seen, but Mr. Kronberg reported there were "a lot of ducks".

Aerial photos were taken in May. We made a strong recommendation to the Minot AAO that the area be purchased as a wetland area, and apparently there has been some realty activity.

Sheyenne Lake. Sheyenne Lake has been very low on water since 1961. Runoff this spring and summer was enough to bring the water up to where it was running through the culverts under the causeway. By fall it had dropped four inches below the culvert.

The waterfowl situation was:

	June 11			Oct. 1
	M	F	Pr.	
Swans				50
Mallard	13	1	1	
Gadwall	3	3	4	400
Pintail	2			
Blue-winged Teal	4		1	
Shoveler			2	
Redhead	8	1	2	
Canvasback	13	4	2	20
Ruddy	1		2	
Scaup	14		3	60
Bufflehead			1	
Coots	9			
Unid. ducks	50			
Western Grebes	2			

Sheyenne Lake will be flooded out by the Lonetree Reservoir. This should be about 1971. Biologically we will be losing a good lake for divers and swans, when it has water, but administratively we will be losing a headache.

SIGNATURE PAGE

Submitted by:

David C. McGlauchlin
(Signature)

David C. McGlauchlin

Refuge Manager
Title

Date: March 2, 1966

Approved, Regional Office:

Date: _____

(Signature)

Regional Refuge Supervisor

W A T E R F O W L

REFUGE Snake Creek

MONTHS OF September TO December, 19 65

(1) Species	(2) Weeks of reporting period									
	8/29-9/4 1	9/4-11 2	11-18 3	19-25 4	26-10/2 5	10/3-9 6	10-16 7	17-23 8	24-30 9	10/31-11/6 10
Swans:										
Whistling Trumpeter						37	37	50		17
Geese:										
Canada	75	90	180	200	340	240	250	375	300	400
Cackling				100	100	100		25		
Brant										
White-fronted			36	15	15			1		
Snow				2	2					
Blue										
Other										
Ducks:										
Mallard	600	800	1200	2000	4000	4000	7000	15,000	15,000	16,000
Black										
Gadwall	800	850	900	1000	1500	800	800		100	200
Baldpate	200	200	200	300	200	400	1200	700	500	500
Pintail	500	600	600	750	400	1000	2500	200	200	400
Green-winged teal	400	400	400	300	400	400	700	400	300	400
Blue-winged teal	250	400	400	500	400	300	150			
Cinnamon teal										
Shoveler	200	200	150	150	150	200	400	200		
Wood								1		
Redhead	25	75	150	150	200	250	200	150	100	250
Ring-necked										
Canvasback					20					25
Scaup	40	80	100	120	125	200	250	600	700	2000
Goldeneye					6	20	40	25	20	15
Bufflehead					6	110	20	40	50	300
Ruddy	40	100	150	180	120	100	120	50	50	50
Other										
Coot:	600	2000	3000	3000	2500	2200	1200	400	250	75

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Snake CreekMONTHS OF September TO December, 19 65

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	7-13	14-20	21-27	11/28-12/4	5-11	12-18	19-25	26-1	waterfowl	Broods:Estimated	
	11	12	13	14	15	16	17	18	days use	seen	total
Swans:											
Whistling	50	9							1820		
Trumpeter											
Geese:											
Canada	500	350	300	140	127	120	120	80	29,300		
Cackling									2275		
Brant											
White-fronted									470		
Snow									10		
Blue											
Other											
Ducks:											
Mallard	12,000	1200	1200	30	40	40	20	20	561,000		
Black											
Gadwall									48,650		
Baldpate	50	10	5						31,255		
Pintail	150		2						51,100		
Green-winged teal			5						28,735		
Blue-winged teal									16,800		
Cinnamon teal											
Shoveler		10							11,600		
Wood											
Redhead									10,850		
Ring-necked											
Canvasback									300		
Scaup	500	400							35,800		
Goldeneye	10	10							1,000		
Bufflehead	40								3,260		
Ruddy									6,700		
Other Common											
Merganser	40	12							360		
Coot:		3							106,600		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	1,820	77	
Geese	32,055	500	
Ducks	807,400	20,140	
Coots	106,600	3,000	

SUMMARY

Principal feeding areas All farm units, Carlson

slough, east end Mud Lake.

Principal nesting areas _____

Reported by David C. MacGlashlin

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Snake CreekMonths of September to December 19565

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
White Pelican			80	Sept.						100
Double-crested Cormorant			300	Sept.	1	12/1				300
Sandhill Crane	1	8/28	200	9/3	38	10/1				200
Great Blue Heron			2-3	Sept.						4-5
II. <u>Shorebirds, Gulls and Terns:</u>										
Lesser Yellowlegs			250	Oct.	10	10/12				300
Ring-billed Gull			80-100	Oct.	3	11/25				
Franklin Gull			1500	Sept.						1800
Benaparte Gull	4	10/28								

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> :					
Mourning dove					
White-winged dove					
IV. <u>Predaceous Birds</u> :					
Golden eagle	1	11/3	1-2	Nov.	2 (1 pr.?)
Duck hawk	1	9/28	1	9/28-10-1	1
Horned owl	-1		1	10/1	2-3
Magpie					
Raven					
Crow	50	10/2	200	10/10	200
Bald Eagle	None	seen		150	
Marsh Hawk					
Red-tailed Hawk			9	10/9	12
Sparrow Hawk	3	9/19	3	9/19	5
Snowy Owl	1	11/10	6	11/20	12
Short-eared Owl	1	11/3	1	Nov-Dec	2
Reported by <u>D. McGlaughlin</u>					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

Refuge Snake Creek

Months of September to December, 1965

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sharp-tailed Grouse	7000 a. prairie crop-land, "go- back".								50-60	Very few observations of grouse during period.
Gray Partridge	1500 a. stubble and "go-back".								50-60	About same number of coveys noted, but about half usual number/covey.
Ring-necked Pheasant	2000 a. crop- land "go-back", shelter belts								5-12	4 males, 1 female seen at intervals, probably complete population

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Snake Creek Calendar Year 1965

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	9500 a. crop-land, "go- back," prairie, tree plantings, sloughs.		52									175(Feb. 11)	30-40	
American Pronghorn	8000 a. crop-land, go- back, prairie		30*						----4*			52 "	40-45	

Remarks: 24 antelope known kill on refuge, 5 just outside refuge, all part of same herd.

*Loss of 4 antelope a combination of disease and winter stress.

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge Snake Creek Year 1965

Botulism

Period of outbreak Year long

Period of heaviest losses Summer

Losses:

	Actual Count	Estimated
(a) Waterfowl C. geese	<u>10</u>	<u>--</u>
(b) Shorebirds	<u> </u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	<u> </u>	<u> </u>
(b) Shorebirds	<u> </u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

Areas affected (location and approximate acreage)

geese in goose pen

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.)

Stagnant at one time, but geese are lost year round. 2 in winter, 6 goslings in early June, 2 glg. geese mid-July.

Condition of vegetation and invertebrate life

Remarks Cause of death unknown. Most birds seen in good condition. One gosling to be analyzed for pesticide.

Lead Poisoning or other Disease

Kind of disease Epidemic Hemorrhagic Disease

Species affected Antelope

Number Affected	Actual Count	Estimated
Species Antelope	<u>4</u>	<u>--</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

Number Recovered ?

Number lost 4

Source of infection Endemic

Water conditions

Food conditions Poor-antelope coming to bldgs. for grain, very severe winter stress, prolonged cold, deep snow, probably stress in direct cause of death, EHD is contributing

Remarks No further loss with warmer weather.

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Snake Creek

1965

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Plant- ing	Survival	Cause of Loss	Remarks
Ponderosa pine	Hdqts.		2	6' trees		100%		Landscaping
Pfitzer juniper	"	Found.	6	1' "		"		"
Annual Spirea	"	Foundat.	6 ea.	1 yr.		"		"
Nanking Cherry	"		2 ea.	4' trees		50%	drought	"
Russian Mulberry	"		1 ea.	2' trees		100%		"

TOTAL ACREAGE PLANTED:

Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Snake Creek County McLean State North Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Wheat	488	12,771			6	180 bu.	494		494
Barley	300	11,755	28	1,100 bu.	338	13,500	666		666
Oats	66	3,550			0		66		66
Rye	103	2,030			6	green feed	109		109
Corn	0				34	300 bu.	34		34
Millet	0				20	400 bu.	20		20
								Fallow Ag. Land	942

No. of Permittees: Agricultural Operations 11 Haying Operations None Grazing Operations 3

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
None				1. Cattle	44	176	None	354
				2. Other	None			
				1. Total Refuge Acreage Under Cultivation				2,331
Hay - Wild	None			2. Acreage Cultivated as Service Operation				None

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Snake CreekMonths of January through December, 1965

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Barley	300	1000	1300	180	--	520	700	600		600	

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge Headquarters

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

ANNUAL REPORT OF PERSTICIDE APPLICATION

Snake Creek

Proposal Number

Reporting Year

1965

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7/22	Leafy spurge	NE¼ Sec.4, T147, R83	1/100	Tordon 22K	4½ oz.	2 lb./acre	Water-5 gal.	Back-pack Sprayer
6/10	Willow, Cottonwood	Road ditches(see attached map)	2-3	2,4-D, 2,4,5-T	½ gal.		Water-100 gal	Tank Sprayer (hand spray)
6/23	Willow, Cottonwood	"	"	" "	"		"	"

10. Summary of results (continue on reverse side, if necessary)

Within two weeks plants were turning brown to black. In late September (two months post spraying) all emergent growth of Leafy spurge was black and withered.

Apparent top kill on willow and cottonwood with 2,4-D and 2,4,5-T; will be followed up in 1966.

Snake Creek Waterfowl Production Areas

I. EASEMENTS

Easements continued to accumulate during the year but not at the record pace of 1964. Apparently the realtors "skimmed the cream" in 1964 and securing easement contracts is now requiring more effort. Table I depicts the easement situation thru December 31, 1965.

TABLE I
Snake Creek Wetland Easements
Total Acres Under Easement By Year

County	1962	1963	1964	1965	Total
McHenry	--	3,669	17,972	4,468	26,109
McLean	--	160	4,208	3,170	7,538
Sheridan	--	1,008	14,885	25,843	41,736
Ward	<u>1,546</u>	<u>6,897</u>	<u>60,601</u>	<u>30,195</u>	<u>99,239</u>
Totals	<u>1,546</u>	<u>11,734</u>	<u>97,666</u>	<u>63,676</u>	
			Grand Total		174,622

Through the cooperation of the Minot Air Force Base the gratis services of a helicopter were obtained. About 85% of all the easements were aerially checked for compliance in early November. This check revealed 11 violations, all due to burning. Each violation was ground checked and contact was made with the offending party. It appeared the violations fell into several general categories as follows:

Burned roadside ditches including adjacent wetlands-2

Tenant or hire personnel who were unaware of owner's easement contract did burning-5.

Wildfires-2

Intentional-2

Each party was informed that a violation occurred and a warning was issued against future infractions. A case history was put into the permanent file. No legal action was taken on any of the violations.

II. PURCHASED AREAS.

Even with the passage of tax relief legislation land acquisition has been very slow. County Commissioners still are reluctant to give approval on many tracts. One bright spot is that the Governor is giving approval over the county commissioners' veto on some tracts. It appears the only successful procedure will be to acquire a few tracts each year over a long period rather than securing many tracts in a few years. Surely the 1968 deadline as established in the original Wetlands Acquisition Act passed by Congress will have to be extended if the program is to accomplish its purpose.

At the close of 1965 the Bureau had control of 29 Waterfowl Production Areas in the 4 counties with the following distribution: McHenry County-1; McLean County-5; Sheridan County-15; Ward County-8. Table II gives the acreage and distribution.

TABLE II
Acres Purchased for WPAs

County	1962	1963	1964	1965	Total
McHenry	--	--	--	120	120
McLean	--	182	104	704	990
Sheridan	160	1,400	1,837	567	3,964
Ward	354	479	--	240	1,073
Total	514	2,061	1,941	1,631	
Grand Total					6,147

In general, water conditions in the district ranged from excellent in the northwest to very poor in the southeast. Most wetlands in Sheridan County were dry while in Ward County water was plentiful. Of the 29 WPAs, 23 or 79% held water thru August. The 6 dry WPAs were all in Sheridan County. Duck production in the district was the best since the wetlands district was established in 1962.

Brood counts were taken on all WPAs that were missed in 1964. Water level readings were taken in early August on all WPAs.

III. WILDLIFE

Some general impressions of interest were noted during the year. One was the increased number of canvasback broods in the southwest one-half of Ward County. Also, ruddy duck broods are generally scarce in the district but the newly acquired Weishaar WPA produced five ruddy broods as well as other duck broods.

With the increased water in Ward County muskrat houses irrupted in the vegetation in several wetlands but most of the county is still barren of rats. I still only know of one marsh in Sheridan County and two in McLean County that have any rats.

White-tailed deer numbers in the district were about equal to 1964. However, upland game populations were way down. Pheasant populations on the Kindschi, Tkach, and Haas WPAs were completely eliminated during the severe winter of 1964-5. I would guess that gray partridge in the district were down about 50 to 60% from 1964. Sharptail grouse faired the best and I would judge they were down about 25% from 1964.

Sandhill cranes again concentrated in the vicinity of Turtle Lake. The peak population was estimated at about 7,000 which is comparable to recent years.

While many ducks were observed during spring migration and duck production was up, the fall migration was very poor. Turtle Lake which usually has a peak of 6-7,000 ducks peaked at about 1,000. This was the general situation throughout the district with the exception of the southwest portion of Ward County. This was the wet area in the district and much swathed grain was in the field. Field feeding ducks in that particular area were plentiful but in general the fall migration through the district was very poor.

IV. DEVELOPMENT & MAINTENANCE

Posted Landman, State Land, Schlafman, Schott, Allen, Oliver, Huft, Lind, Jones, Hanson, Lee and BLM Tracts.

Maintenance as necessary on 26 miles of existing boundary fence.

Fenced Schaefer Tract and 1½ miles of Allen Tract.

Dugout completed on Field WPA.

Dugout and wildlife pond completed on Reiser WPA.

Built road approach on Thorson WPA.

Sprayed Canada Thistle patches on Tkach and Cartwright WPAs with Tordon.

Cemented in brass cap bench marks on all newly acquired WPAs.

Took water level readings on all WPAs in early August.

Seeded 110 acres to native grasses.

Summerfallowed 24 acres for tree planting site.

V. RESOURCE MANAGEMENT

The following WPAs were grazed in 1965 using the established North Dakota rate of \$1.52/AUM:

WPA	AUMs	Revenue
Tkach	99.5	\$151.24
Thorson	35.5	53.96
Grayson	28.9	43.93
Allen	114.5	174.04
Total	278.4	\$423.17

All grazing units are in excellent condition at the close of the year.

Only 1 cooperative farming permit was issued in 1965. This was for 6.5 acres on the Haas WPA. This cropland was seeded to grass with a nurse crop of oats.

There was no haying on any of the tracts in 1965.

VI. GENERAL ITEMS

Two violators were apprehended during the year. One was Robert Boe of Turtle Lake, North Dakota for late shooting and over-limit on mallards. He and his parents appeared before juvenile Commissioner Leonard Hanson. Boe was required to copy in long hand the waterfowl section of the State Game and Fish laws and also to hunt only while accompanied by his father for the next year.

The other apprehended violator was William Hills of Coleharbor, North Dakota. During the Snake Creek Refuge deer season Mr. Hills shot a fawn while he possessed a "forked bucks only" license. The case was turned over to State Warden Wright who prosecuted it in County Court. A fine of \$5 with \$5 costs was imposed.

About 75 Boy Scouts of the Missouri Valley Council were taken on a 5 mile wildlife hike and campout in May. In cooperation with State Biologist Enyeart we barged the scouts to state managed Mallard Island where about 2,000 trees were planted. We then camped on the island overnight and returned the next day.

Both the winter and summer meetings of the North Dakota Chapter of the Wildlife Society were attended as well as the monthly meetings of the Turtle Lake Wildlife Club.

A modern house was purchased along with the wetland on the Weishaar WPA. This excellent WPA is located 4 miles northeast of Snake Creek Refuge and in late December the wetland manager moved into the residence.

SIGNATURE PAGE

Submitted by:

Ralph Fries, Jr.
(Signature)

Ralph F. Fries

Wetlands Manager

Title

Date: March 2, 1966

Approved, Regional Office:

Date: 4/4/66

Derald W. Wilson
(Signature)

ACTING ASSISTANT
Regional Refuge Supervisor

SNAKE CREEK REFUGE

PHOTOS

- (2) Typical refuge problem. Not quite as bad as irate cattle grazer threatening to see his congressman.



- (4) Barley shocks. These had already had some use by geese, ducks, deer and antelope; which accounts for the beat-down appearance.



(3) Stacking durum wheat at Fox place.



- (7) Typical goose nest on an island. Second successful year for this pair of geese, on island #2. Every island nesting goose at Snake Creek thus far has been right out in the open, with no attempt to nest next to anything, to break up outline of goose.



- (5) Two typical shoreline types - both on islands. The upper is of a very flat muddy shoreline, ideal for aquatic vegetation, the lower of a more abrupt shoreline with moderate erosion.

